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XRAM Acc No: C91-119447

XRPX Acc No: N91-210586

Tyre tread rubber compsn. contg. silane coupling agent - having  
simultaneous good wet skid- rolling- and wear resistance

Patent Assignee: BRIDGESTONE CORP (BRID )

Inventor: HAMADA T

Number of Countries: 008 Number of Patents: 012

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 447066	A	19910918	EP 91301615	A	19910227	199138 B
JP 3252431	A	19911111	JP 9049625	A	19900302	199151
JP 3252433	A	19911111	JP 9049624	A	19900302	199151
US 5409969	A	19950425	US 91660812	A	19910226	199522
			US 93100339	A	19930802	
US 5496883	A	19960305	US 91660812	A	19910226	199615
			US 93100339	A	19930802	
			US 94360445	A	19941221	
EP 447066	B1	19960501	EP 91301615	A	19910227	199622
DE 69119125	E	19960605	DE 619125	A	19910227	199628
			EP 91301615	A	19910227	
ES 2085959	T3	19960616	EP 91301615	A	19910227	199631
US 5496883	B1	19980602	US 91660812	A	19910226	199829
			US 93100339	A	19930802	
			US 94360445	A	19941221	
JP 2846394	B2	19990113	JP 9049624	A	19900302	199907
JP 3021516	B2	20000315	JP 9049625	A	19900302	200018
EP 447066	B2	20000816	EP 91301615	A	19910227	200040

Priority Applications (No Type Date): JP 9049625 A 19900302; JP 9049624 A  
19900302

Cited Patents: DE 3813678; EP 102045; EP 299074; GB 2056460

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
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EP 447066	A	19		
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Designated States (Regional): DE ES FR GB IT NL

US 5409969	A	9	C08K-003/04	Cont of application US 91660812
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US 5496883	A	9	C08K-003/36	Cont of application US 91660812
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Div ex application US 93100339

Div ex patent US 5409967

EP 447066	B1 E	20	C08L-009/00	
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Designated States (Regional): DE ES FR GB IT NL

DE 69119125	E		C08L-009/00	Based on patent EP 447066
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ES 2085959	T3		C08L-009/00	Based on patent EP 447066
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US 5496883	B1		C08K-003/36	Cont of application US 91660812
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Div ex application US 93100339

Div ex patent US 5409967

JP 2846394	B2	9	C08L-015/00	Previous Publ. patent JP 3252433
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JP 3021516	B2	8	C08L-009/00	Previous Publ. patent JP 3252431
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EP 447066	B2 E		C08L-009/00	
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Designated States (Regional): DE ES FR GB IT NL

Abstract (Basic): EP 447066 A

New rubber compsn. for tyre tread comprises 1) 100 pts. wt. of a polymer rubber having a glass transition temp. Tg of -50 deg.C min., obtd. by polymerisation of 1,3 butadiene or copolymerisation of 1,3 butadiene and styrene with an organic alkali metal initiator, or 100 pts. wt. of a rubber blend contg. at least 30 parts. wt. of the said polymer and 70 pts.wt. max. of another diene rubber, 2) 10-150 pts.wt. of silica filler, 3) 0-150 pts.wt. of carbon black, 4) 0.2-10 pts.wt. of at least one silane coupling agent  $Y_3SiC_nH_{2n}A$  where Y is Cl or 1-4C alkyl or alkoxy, n is an integer from 1 to 6 and A is  $-SmC_nH_{2n}SiY_3$ , X gp. or  $SmZ$  where m and n are integers from 1 to 6, Y as before, X is nitroso, mercapto, amino, epoxy, vinyl, imido gp. or Cl and Z is gp. (i) to (iii).

ADVANTAGE - Pneumatic tyres of the above tread compsn. have simultaneously good wet skid resistance, good rolling resistance and good wear resistance. (19pp Dwg.No.0/0)

Abstract (Equivalent): EP 447066 B

A pneumatic tyre having a tread made from a rubber composition comprising 10-150 parts by weight of a silica filler, 0-150 parts by weight of carbon black and 0.2-10 parts by weight of at least one silane coupling agent represented by the following general formula:  $Y_3-SiO_nC_nH_{2n}A$  (I), wherein Y is an alkyl group or alkoxyl group having a carbon number of 1-4 or a chlorine atom, provided that three Ys are the same or different, n is an integer of 1-6, and A is a  $-SmC_nH_{2n}Si-Y_3$  group,  $-X$  group or  $SmZ$  group (in which X is a nitroso group, a mercapto group, an amino group, an epoxy group, a vinyl group, an imido group or a chlorine atom, Z is (I)-(III); each of m and n is an integer of 1-6 and Y is the same as mentioned above), based on 100 parts by weight of a polymer rubber having a glass transition temperature of not lower than -50 degrees C by polymerisation of 1,3-butadiene or copolymerisation of 1,3-butadiene and styrene with an organic alkali metal initiator, or a rubber blend of not less than 30 parts by weight of the said polymer and not more than 70 parts by weight of another diene series rubber.

(Dwg.0/0)

Abstract (Equivalent): US 5409969 A

Pneumatic tyre comprises a tread made from a rubber compsn. comprising 10-150 pts.wt. of a silica filler, 0-150 pts.wt. of carbon black and 0.2-10 pts.wt. of silane coupling agent(s) of general formula  $Y_3-Si-C_nH_{2n}A$ , based on 100 pts.wt. of a (co)polymer rubber or a rubber blend of 30 pts.wt. or more of the above (co)polymer and 70 pts.wt. or less of another diene series rubber, where the (co)polymer is a silane-modified polymer having a Tg of -50 deg.C or higher and obtd. by reacting an active terminal of a resulting living polymer through polymerisation of 1,3-butadiene or copolymerisation of 1,3-butadiene and styrene in an inert organic solvent, in the presence of an organic alkali metal initiator, with a silane cpd. of general formula  $U_iSi(OR)_jR'^{4-i-j}$ .

In the formulae Y is 1-4C alkyl or alkoxyl or Cl; n is 1-6; A is  $-SmC_nH_{2n}Si-Y_3$ ,  $-X$  or  $-SmZ$ ; X is nitroso, mercapto, amino, epoxy, vinyl, imido or Cl; Z is  $-C(=O)C(Me)=CH_2$  or a gp. of general formula (I); m and n is are 1-6; U is Cl, Br and I; R and R' are 1-20C (halo)alkyl,

aryl or vinyl; j is 1-4; i is 0-2; and i+j is 2-4.

USE/ADVANTAGE - For pneumatic tyres. Good wet-skid resistance, rolling resistance and wear resistance are attained.

(Dwg.0/0)

US5496883 A pneumatic tire comprises a tread made from a rubber compsn. comprising 10-150 pts. wt. of a silica filler, not more than 150 pts. wt. of carbon black, wherein the carbon black and silica filler are present in a weight ratio of 95/5-10/90, and 0.2-10 pts. wt. of at least one silane coupling agent of formula:  $Y_3-Si-C_nH_{2n}A$  (I) (where Y is an alkyl gp. or 1-4C alkoxy gp. or Cl, provided that the three Y's are the same or different, n is 1-6, and A is an - $SmC_nH_{2n}Si-Y_3$ , -X or  $SmZ$  (in which X is nitroso, mercapto, amino, epoxy, vinyl, imido or Cl, Z is -(S)CN(CH<sub>3</sub>), -(O)C(CH<sub>3</sub>)CCH<sub>2</sub> or formula (i), each of m and n is 1-6 and Y is the same above)), based on 100 pts. wt. of a polymer or copolymer rubber having a glass transition temperature of not lower than -50deg. C. obtained by polymerization of 1,3-butadiene or copolymerization of 1,3-butadiene and styrene in an inert organic solvent with an organic alkali metal initiator, or a rubber blend of not less than 30 pts. wt. of the above polymer or copolymer and not more than 70 pts. wt. of another diene series rubber.

(Dwg.0/0)

Title Terms: TYRE; TREAD; RUBBER; COMPOSITION; CONTAIN; SILANE; COUPLE;

AGENT; SIMULTANEOUS; WET; SKID; ROLL; WEAR; RESISTANCE

Derwent Class: A12; A60; A95; E11; Q11

International Patent Class (Main): C08K-003/04; C08K-003/36; C08L-009/00; C08L-015/00

International Patent Class (Additional): B60C-001/00; B60C-005/00; B60C-011/00; C08C-019/44; C08K-003/34; C08K-005/54; C08K-005/541; C08L-009/06

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): A08-M01D; A08-R06A; A12-T01; E05-E01; E05-E02; E31-N04D; E31-P03

Plasdoc Codes (KS): 0009 0034 3003 0037 0202 0205 0206 0207 0208 0211 0218 0224 3000 0040 0042 0043 0046 0049 0052 0183 0226 0228 0231 0306 3159

1059 1060 1075 1093 1095 1987 2001 2020 2021 2041 2043 2065 2066 2073  
2116 2122 2198 2202 2206 2217 2218 2296 2301 2302 2307 2315 2318 2319  
2507 2560 2583 2617 2623 2657 3252 3253 2667 2670 2826

**Polymer Fragment Codes (PF):**

\*001\* 014 02& 03& 032 034 04- 040 045 05- 055 056 06- 062 075 08- 09& 09-  
10& 10- 11& 117 118 122 13- 15& 15- 163 17& 229 231 24- 257 263 27&  
273 292 293 299 303 307 308 310 314 316 332 341 342 347 351 355 359  
398 41& 42- 437 44& 473 48- 504 512 54& 546 55& 551 556 560 562 575  
58- 583 585 587 597 598 600 604 608 672 679 688 689 691 721 723 725  
726

**Chemical Fragment Codes (M3):**

\*01\* B414 B614 B711 B712 B713 B720 B741 B742 B743 B744 B751 B752 B831  
B832 C011 D012 E600 F012 F100 H100 H181 H498 H592 H598 H602 H681  
H721 J271 J290 K221 K224 K720 L432 L440 M210 M211 M212 M213 M214  
M231 M232 M233 M250 M262 M272 M273 M281 M282 M311 M312 M313 M314  
M315 M321 M331 M342 M361 M391 M392 M411 M510 M511 M520 M521 M530  
M540 M782 M903 M904 Q020 Q132 R038 9138-B4501-M 00012  
\*02\* B114 B702 B720 B831 C108 C800 C802 C803 C804 C805 C807 M411 M782  
M903 M904 M910 Q020 Q132 Q606 R038 R01694-M 00012

**Ring Index Numbers:** 00012

**Derwent Registry Numbers:** 0122-U; 0736-U; 0882-U; 0895-U; 1005-U; 1520-U;  
1694-U; 1725-U; 5085-U; 5293-U; 5325-U; 5398-U

**Specific Compound Numbers:** R01694-M